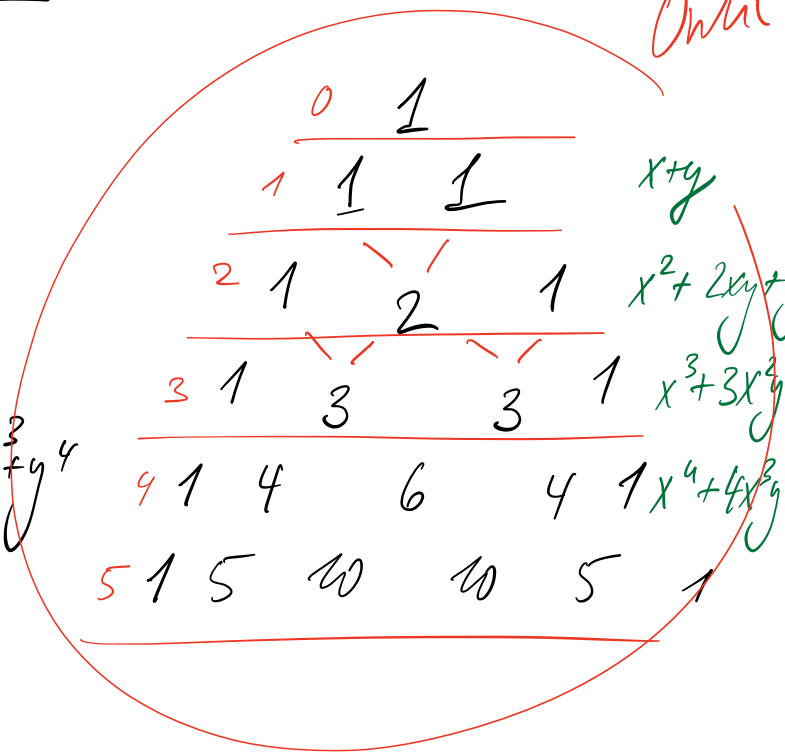
# Triangle de Pascal

1623 – 1662

Pascal

Développer $(x+y)^n$




$$(x+y)^4 = x^4+4x^3y+6x^2y^2+4xy^3+y^4$$

$$(y^4 - 3b)^3 =$$

$$(A - B)^3 = A^3 - 3A^2B + 3AB^2 - B^3$$

$A = y^4 \quad B = 3b$

$$(y^4)^3 - 3(y^4)^2 3b + 3y^4(3b)^2 - (3b)^3 =$$

$$\boxed{y^{12} - 9y^8 b + 27y^4 b^2 - 27b^3}$$

$$
\begin{array}{ccccccccc}
 & & & & 1 & & & & \\
 & & & 1 & & 1 & & & \\
 & & 1 & & 2 & & 1 & & \\
 & 1 & & 3 & & 3 & & 1 & \\
1 & & 4 & & 6 & & 4 & & 1 \\
1 & & 5 & & 10 & & 10 & & 5 \quad 1 \\
1 & & 6 & & 15 & & 20 & & 15 \quad 6 \quad 1
\end{array}
$$

$\longrightarrow (x+y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$

$$(4abc - 8xy^2)^3 = (4abc)^3 + 3(4abc)^2 \cdot 8xy^2 + 3 \cdot 4abc \cdot (8xy^2)^2 + (8xy^2)^3$$

$x = 4abc \quad y = 8xy^2$